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FIFTY YEARS OF THE ALL-UNION ACADEMY OF AGRICULTURAL SCIENCES

Moscow PRAVDA in Russian 4 Dec 79 p 2

[Article: "In the Vanguard of Scientific Research"]

[Text] The All-Union Academy of Agricultural Sciences imeni V. I. Lenin is 50 years old. The academy was awarded the Order of the Red Banner of Labor for its efforts in development of agricultural science and with regard to the 50th anniversary since its day of founding. The session of VASKhNIL, which opened on 3 December in Moscow in the Hall of Columns of the House of Unions, was devoted to the portentous jubilee.

Responsible officials of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet and USSR Council of Ministers, directors of ministries and agencies, public representatives, foreign guests and leading agricultural workers participated in the work of the session.

Those present enthusiastically elected an honorary presidium as part of the Politburo of the CPSU Central Committee headed by comrade L. I. Brezhnev.

Candidate to membership in the Politburo of the CPSU Central Committee, Secretary of the CPSU Central Committee M. S. Gorbachev warmly greeted those assembled at the session.

Under continuous applause, he conveyed hearty congratulations to the participants of the jubilee session and to all scientists and workers of the academy in the name of the CPSU Central Committee, the Presidium of the USSR Supreme Soviet, the USSR Council of Ministers and of comrade L. I. Brezhnev and wished them new creative successes.

The jubilee session coincided with an important event in the life of the party and the country, M. S. Gorbachev emphasized. A plenary session of the CPSU Central Committee and a session of the USSR Supreme Soviet were held a few days ago. The development of the national economy was analyzed thoroughly and the developed program of actions to implement the decisions of the 25th CPSU Congress on problems of the economic policy of the party was presented in the speech of comrade L. I. Brezhnev at the Plenary

Session. The main trends and sections of work requiring the greatest concentration of the party's and people's efforts were determined. Special attention was turned toward acceleration of scientific and technical progress, a further increase of the efficiency of social production and of all qualitative indicators. Questions of the style and methods of organizing and political-educational work, the responsibility of cadres for entrusted matters and improvement of planning and management of the economy were essentially posed on Leninist principles in the speech of comrade L. I. Brezhnev.

The Academy of Agricultural Sciences is the highest scientific center in the field of agricultural, water and forestry management of the country. V. I. Lenin was the source of its formation. In creating the academy, the Soviet government posed the task of concentrating theoretical and practical work on problems of an increase and socialist reconstruction of the country's agriculture.

Deep transformations have occurred during the years of socialist construction based on Lenin's agrarian policy in the Soviet countryside. The country's kolkhozes and sovkhozes are now modern highly commercial agricultrual enterprises supplied with powerful equipment and with highly qualified personnel at their disposal. All this has permitted our party and the Soviet government to raise agriculture to a qualitatively new level of development. The gross product output in 1978 exceeded the 1928 level 3.4-fold, while labor productivity on the kolkhozes and sovkhozes increased 5.9-fold during this time. Scientists made an important contribution to development of agricultural production. We must not forget to give due respect to those who were the sources of modern agricultural science and who laid its firm, reliable foundation. This is the prominent scientist and public figure, the founder of the Soviet school of the physiology of plants K. A. Timiryazev, this is the first president of VASKhNIL, creator of the unique worldwide collection of plant seeds and the theoretical bases of selection N. V. Vavilov. I. V. Michurin made an enormous contribution to the theory and practice of kolkhoz and sovkhoz production. Such prominent Soviet scientists as N. M. Tulaykov, V. R. Vil'yams, D. N. Pryanishnikov, P. P. Luk'yanenko, V. S. Pustovoyt, K. I. Skryabin, M. F. Ivanov, Ye. F. Liskun, V. P. Goryachkin, A. N. Kostyakov and V. S. Nemchinov worked at the All-Union Academy of Agricultural Sciences.

The scientists now working continue to develop and intensify the scientific ideas of their predecessors and to enrich agricultural science and practice with new conclusions and propositions. Among them are V. N. Remeslo, N. T. Tsitsin, P. F. Garkavyy, V. K. Milovanov and many others. Honorary academician of VASKhNIL T. S. Mal'tsev and academician A. I. Barayev have made an important contribution to development of the scientific bases of steppe and virgin-lands agriculture and L. I. Brezhnev refers warmly to them in his book "The Virgin Lands."

An important historical benchmark in the development of the productive forces of the Soviet countryside became the March (1965) plenary session of the CPSU Central Committee. It took a course toward fundamental solution of agricultural problems whose time had come and implementing extensive social transformations in the countryside and laid the principle bases of the modern agrarian policy of the CPSU. The decisions of this plenary session created especially favorable conditions for the creative work of scientists and for intensification of the effect of science on an increase of agricultural production. During the past few years, VASKhNIL scientists have taken a new step in development of the theoretical propositions and recommendations in the field of agriculture and livestock breeding, new progressive systems and technologies and new ideas on improving the forms and methods of organization of labor and production. The achievements of scientists in the field of selection and remote hybridization, physiology and agricultural mechanics received wide recognition.

The all-encompassing program for further development of agriculture was developed at the July (1978) Plenary Session of the CPSU Central Commitee. Lenin's postulation of the problem of creating a large food stock in our country was announced with new force at this plenary session and the party's course toward transformation of agriculture to a highly developed sector of the economy was universally justified. The program worked out by the plenary session of the CPSU Central Committee is distinguished by its scale, broad grasp of the problems and a complex approach to their solution.

Comrade L. I. Brezhnev is personally making an invaluable contribution to development of modern agrarian policy and is subsequent practical implementation. At his initiative and with his direct participation, the most timely and main problems of development of agriculture and of the entire agroindustrial complex are being posed and solved.

In light of the new tasks posed by the July Plenary Session of the CPSU Central Committee, the role of science and the need to expand and broaden scientific research and to further strengthen the ties of science to industry increase even more.

Dwelling in detail on the routine tasks faced by agricultural science, M. S. Gorbachev devoted a great deal of attention to problems of increasing agricultural stability. Frequent and irregularly significant fluctuations in the harvests of grain, feed and other agricultural products by years inhibit production and create specific difficulties both in agriculture and in the entire economy. There are many questions here toward solution of which science can and should take a more active role. Obviously, the proposals that the optimum variants of the agircultural system for production of stable yields be developed with regard to local conditions and on a modern scientific basis throughout the main zones of the country should be supported.

Science is faced with important tasks in the field of plant selection and to production of the necessary varieties of grain, feed, commercial and other crops suitable for mechanized cultivation and harvesting, with shorter vegetation period, resistant to diseases and pests and which have high qualitative merits.

The party is giving great significance to development of complex mechanization and increasing the efficiency and stability of agricultural production. An important field of activity in science are study and practical development of problems related to improving the utilization of agricultural equipment in the countryside. We calculate that the engineer-scientists jointly with machine builders will work persistently on improvement and development of new designs of machines and on an increase of their productivity and reliability.

The speaker dwelt further on the problems of science related to chemization of agriculture, land reclamation, complex transformation of the Nonchernozem zone of the RSFSR and to development of agriculture in the newly organized regions of Siberia and the Far East.

Talking about the tasks on further development of animal husbandry, he emphasized the need for extensive intensification of its sectors, for increasing the productivity of cattle and poultry and of converting to industrial methods of product output. It is quite obvious that the direct and even more active particpation of the academy, of scientific research and experimental institutions and of scientists of various profiles are assumed in all these matters. Problems of using the capabilities of selection and genetics in animal husbandry and of feed and especially of protein production acquire exceptionally important significance in light of the new tasks.

The achieved level of agricultural development and the fundamental qualitative changes in the productive forces of the sector objectively require further improvement of the economic mechanism of management and in many cases an essentially new approach to organization of agricultural production. A special role here belongs to deeper specialization of it and toward combining the forces of farms for extensive utilization of the achievements of scientific and technical progress.

Agriculture now has at its disposal enormous potential and large capital investments are now being directed here. And this will produce its own positive results. However, the efficiency of agricultural production is being increased too slowly and the return compared to investments is inadequate. These problems were sharply raised at the November (1979) Plenary Session of the CPSU Central Committee. A specific fraction of the responsibility here should also be given to agricultural science.

The party has adopted a number of organizational measures to improve the introduction of the achievements of science, technology and leading experience into agriculture. According to the decree of the CPSU Central Committee and the USSR Council of Ministers "On measures for further increasing the efficiency of agricultural science and strengthening its ties to industry," planning has been improved and special subdivisions for introduction of leading experience have been created in the system of agricultural bodies.

In conclusion, M. S. Gorbachev expressed confidence that the scientists of the USSR Academy of Sciences, VASKhNIL and other scientific institutions armed with Marxist-Leninist methodology and extensive knowledge of the laws of development of nature and society, will make a worthy contribution to a further increase of agriculture and to solution of the task posed by the party on transformation of this most important sector to a highly developed sector of the country's economy.

M. S. Gorbachev read the Ukase on awarding the All-Union Academy of Agricultural Sciences imeni V. I. Lenin the Order of the Red Banner of Labor and attached the order to the Academy's banner under prolonged applause of those assembled.

The First Vice-President of VASKhNIL A. A. Sozinov warmly thanked the CPSU Central Committee, the Presidium of the USSR Supreme Soviet, the USSR Council of Ministers and comrade L. I. Brezhnev personally for the high evaluation of the academy's activity and stated that the scientists will devote all their efforts, knowledge and experience to development of agrarian science and to a further increase of agricultural production.

The representatives of government and public organizations and foreign scientists warmly congratulated the academy on its anniversary.

The participants of the session adopted with great enthusiasm the letter of the CPSU Central Committee to comrade L. I. Brezhnev.
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THE STATE OF NORTHERN AFGHANISTAN'S NATURAL RESOURCES

Dushanbe IZVESTIYA AKADEMII NAUK TADZHIKSKOY SSR OTDELENIE BIOLOGICHESKIKH NAUK in Russian No 3, Jul-Sep 79, pp 3-8

[Article by M.N. Narzikulov and G.N. Sapozhnikov; words within slantlines are as transliterated]

[Text] A general overview is given on the economic use of the territories of northern Afghanistan. Emphasized is the necessity of implementing measures for the protection and rational use of the natural resources as well as the need for organizing ecological studies.

Afghanistan is located in the southwestern part of Central Asia. The geographical position of Afghanistan in the high pressure belt of the northern hemisphere far from sea shores (approximately 400 km from the Arabian Sea), surrounded on that side by the high mountain ranges of Baluchistan, determines the physical characteristics of the region. However, the location of Afghanistan in the eastern part of the Iranian plateau, bordering on the expansive deserts of Central Asia on the north, the Central Asian plateau and the Indo-Himalayan forest region on the east and northeast, gives its natural history a unique diversity. The presence of vertical climatic belts in Afghanistan itself emphasizes the variety in its geographic medium to an even greater degree (Polyak 1953).

Various mountain systems (up to 80 percent) and desert plains comprise most of the territory of Afghanistan. Even the most important cultural centers of the country are found at fairly high altitudes: Kabul at 1760 m, Gazni at 2360 m, Kandagar at 1020 m, Gerat at 925 m. The area of the country is 655,000 square kilometers, population - 17.5 million.[1] Afghanistan remains an essentially agrarian country, with the northern provinces leading in farming and industry.

Afghanistan is one of the first developing countries to implement planned economic and cultural development on a democratic basis, beginning 27 April 1978. During the period 1956-1972 three five-year plans were developed and effected (Obolenskiy 1971). After that, agricultural development proceeded in seven-year plans.

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[1] 1978 figures

Almost all of the major, currently functioning centers in industry, agriculture, transportation and communications were built as a result of the first and second five-year plans. Construction was partly begun on five hydroelectric stations with a capacity of 176,000 Kv, two cement factories, the "Dzhangalak" repair factory, a textile factory in Gulbakhar, a grain processing plant in Kabul, and approximately 2,000 km of main hard-surface roads. At the same time a major effort was completed in exploration and digging for useful minerals, petroleum and natural gas, and the construction of natural gas processing centers and pipelines for transporting natural gas to the USSR was completed. More than 13 relatively large industrial complexes were concentrated in Northern Afghanistan and in the Kunduz River valley alone.

Farming is the basis of the country's economy, comprising more than half the gross national product. More than 80 percent of the population is involved in farming. Animal raising comprises 50-60 percent of the gross agricultural production, and farming 40-50 percent.

Almost all crop growing is devoted to grain. Even though some areas specialize in industrial, vegetable or fruit crops, wheat continues to dominate the cultivated fields (in 1977 producing 2.65 million tons). Baglan is one of the largest grain growing regions.

In the northern regions and partially in Baglan Province, in addition to grain growing the last 10 years have seen significant development in the planting of industrial crops, animal raising (primarily Astrakhan sheep), orchards and silk farming.

In irrigated regions there are two harvests per year. For example, in Baglan Province winter wheat or winter barley is sown on irrigated lands in the fall. The following summer, after the harvest of the winter crops, the same land is than planted with summer crops.

The wheat harvest is usually 9-11 quintals per hectare; the upper altitude of wheat planting is 350-3300 m above sea level. During the planting of wheat on irrigated land the soil is usually prepared with a soil-manure mixture.

Rice-growing plays a significant role in farming. Already in the 1920's, Professor N.I. Vavilov identified Kunduz and Khanabad as the two basic regions for growing rice for export. Of the two basic types of rice grown in Afghanistan--coarse-grain (lokk) and fine-grain (main)--the former is less valuable, grows wherever there is sufficient water for irrigation, and as a rule, is consumed within the country. The other type is basically found only in the regions mentioned above. Rice is usually a secondary crop; yield averages 15-16 quintals per hectare (in 1977 a total of 0.43 million tons of rice were harvested).

Legumes are grown throughout Afghanistan: haricot beans, chick peas, cow peas, peas, kidney beans, seavines and lentils. Mustard seed, flax, sesame, rape seed, hemp, castor-oil plants, poppies and cotton are grown for vegetable oils. Cotton is concentrated in the northern provinces (in 1977, 150,000 tons of raw cotton were harvested).

Sugar beets were grown widely since the prewar years. Soviet and Iranian varieties dominate. The sugar-beet harvest is not large: 60-90 quintals per hectare (100,000 tons in 1977).

Orchards and vineyards are important branches of farming in Afghanistan. Total production in 1977 exceeded 780,000 tons. Most of the fresh and dried fruit crop is exported (apricots, pomegranates, peaches, quinces, apples; nuts-almonds, walnuts, wild pistachios and /dzhal'gaza/).

Animal-raising in Afghanistan is primarily of the grazing type. There are desert, semi-arid, foothill, sub-alpine and alpine pastures. The capacity of the pastures, due to nonrational use, is generally low, while the harvesting of hay, the preparation of feed and its storage for winter are almost unknown. An exception is the preparation of camelthorn in September and October in several northern provinces (Mazari-Sherif, Shibargan, Meymenen and others). The local population uses this plant for fuel as well as feed. The yield of 80 percent coverage of camelthorn in its absolutely dry weight is up to 2.06 tons per hectare, at 40-50 percent coverage and 15-20 percent coverage it is 1.24 and .5 tons per hectare, respectively.

Especially in the northen foothills of Gindukush, there are a few areas which can be used for grazing. However, their use is very restricted basically due to a lack of water. Measures taken by the prerevolutionary Afghan Government in irrigation and the construction of watering places in new pastures in the northern and northwestern regions of the country were completely insignificant.

The basis of Afghan animal-raising is small, horned livestock. In 1977 there were approximately 28.21 million head, constituting 86 percent of the total animal-raising production. Sheep comprise a little over 86 percent of the small, horned livestock. The most developed branch of animal raising is Astrakhan sheep--about 6 million head (Zaripov, 1969).

Neat cattle (oxen, buffalo) are used primarily as beasts of burden, and 60 percent of a total 3.7 million head is in northern Afghanistan.

Therefore, agriculture in northern Afghanistan has long been extensive-intensive. In other words, on the one hand there is high population density--up to 100 and more people per square kilometer--a significant industrial and agricultural capability; on the other hand the means of exploiting natural resources is primitive which led to their degradation, to the replacement, in a majority of cases, of a more productive natural landscape by less productive and unstable anthropogenic landscapes. This refers not only to pastures and forest resources, but to a certain degree also to agricultural planting. In part, the nonrational use of soil leads to its significant depletion. Having in mind the development of cotton-growing in Afghanistan, B. Firsov (1956) pointed out: "Although mineral fertilizers are not used in Afghanistan, in Kattagan Province we rarely saw the planting of alfalfa or /giabdar/, which, as is well known, enhances soil productivity. In addition the Dekhkans showed us fields where, they said, only cotton had been grown for 10-11 years, which is not acceptable even with high doses of mineral fertilizer."

Landscape-geographical Characteristics of Northern Afghanistan and Some Problems in the Rational Use of Natural Resources

Geographical-geobotanical studies done by Soviet specialists on the Kunduz section of the Shibar-Kabul Pass showed that there are three types of vertical stratification (Agakhanyants, Kryzhanovskiy, Muratov, 1963). The first type (Afghano-Turkestan), found also in southern Tadzhikistan, is characteristic of foothills and lowlands bordering the Afghano-Tadzhik depression on the south and dominating in northern Afghanistan. It is characterized by the following sequence of vegetation (upwards):

a) 500-800 m above sea level--low grasses, semi-savannah (ephemeroidal, sedge-bulbous-minty type), in places with a thistlelike aspect, and on the /adirnia/ foothills these include fibrous couch-grass, barley (Hordeum leporinum), theniatherium (Thaeniatherium crinitum), egilops (Aegilops squarrosa) and hammada (Hammada leptoclada);

b) from 650-800 to 1200-1300 m above sea level--desert associations of hammada with mixtures of harmala (Peganum harmala) in the lower part of the belt; higher up--wormwood (Artemisia maritima) with a mixture of hammada and thick-stemmed sedge (Carex pachystylis);

c) above 1200-1300 m--pistachio (Pistacia vera) with wormwood, wormwood-thistle, and large grasses-semisavannah backgrounds.

Within the Afghan-Turkestan vegetation type we isolate the following landscape types: desert, vegetation-covered bottomlands[2], foothills, low hills, farm, and other anthropogenic (population centers, parks, artificial plantings of timber and so forth).

As mentioned above, all these landscape forms have been affected by human activity and require some measure of protection or restoration.

The problem of determining the level of chemical pollution in the natural complexes deserves special attention. Toxicological studies of parts of Afghanistan have not been done to this day, although most likely "pesticide residue" exists in some of them. This supposition is based on published data and on information given by the Afghan minister of agriculture with regard to the planned application of 1,200 tons of DDT preparations by anti-locust expeditions in 1978.

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[2] Desert landscapes and vegetation-covered bottomlands in the middle river belts--the left tributaries of the Amu Dar'ya--represent intrazonal elements. In the very north of Afghanistan they make up the independent desert-bottomland complex which includes significant areas along the left bank of the Amu Dar'ya.

In 1959, according to the data of M.G. Pikulin (1961) Afghanistan's northern regions were subjected to massive Moroccan locust attacks. Airplanes of this anti-locust expedition effectively covered approximately 24,000 hectares of fields and orchards with pesticides. Pesticides were also used on malaria-breeding grounds.

Because of the stability of many preparations, especially those related to the DDT group, as well as their great migratory potential and their strong effect (genetic mutations) on living organisms, toxicological studies in northern Afghanistan must be organized soon.

The vegetation comprising the landscape complex of northern Afghanistan also "suffers" from other forms of agricultural activity. Significant areas formerly covered by bottomland vegetation are now under cultivation. Thus, in the central Kunduz River valley (around the city of Puli-Khumri, Kelagai valley) only small portions of bottomlands are preserved (not more than 3-4 hectares).

The real bottom land vegetation is found only along the left bank of the Amu Dar'ya River (especially between the lowlands of the Kunduz (Surkhob) and the Kokcha Rivers). Probably the first Afghanistan preserve, to protect the genetic heritage of the desert-bottomland complex, should be established here.

Destruction of the bottomlands depletes wild animal resouces. Since 1963 the Turanian tiger (Panthera tigris virgata) has completely disappeared from Afghanistan (Nitkhammer, 1974). In fact this species appears to be extinct, since the investigations of Iranian scientists have shown that it has also disappeared from Iran (Potapov, Sapozhnikov, 1978). The territory of the Bokhara deer (Cervus elaphus bactrianus) as well as that of other animal species, which are found in the desert and bottomland has been limited.

Woody and bushy vegetation in other landscape complexes of northern Afghanistan has been subjected to practically uncontrolled destruction. There are two reasons: 1) the lack of other fuel resources and building timber; 2) the lack of controls and strong regulations for protecting forest vegetation. Thus, for example, in the Kelagai valley at present (January 1978) all vegetation which is just barely usable for fuel is being destroyed. Plants of wormwood hammada, /podushka/, acanthus, and other bushes are being pulled up by the roots.

Forests are quite rare in Afghanistan. True forest vegetation is preserved only in the mountains in the southeast, in Nuristan. Here oak trees are replaced by conifers-deoderous, spruce and firs-at higher altitudes. The fruit of wild trees and bushes in several regions is the basic food of the population, for whom it replaces grain (mulberries in the mountain region, dzhal'gyz nuts in Nuristan).

Wild pistachio, as N.M. Gurevich (1963) notes, is found in Badgiz (north of Gerat), south of Maimen, southwest of Balkha, north of Khanabad and near

Faisabad. There are no cultivated plantings of pistachio in Afghanistan and the amount of pistachio production depends on the harvest and the intensity of the gathering efforts. According to Afghan data, annual commercial production averages 1,500-2,000 tons. Pistachio, like other nuts, is exported. Unfortunately, in 1959, Afghanistan also exported $1.3 million in forest products to Pakistan.

Since the 1960's there have been no projects for regenerating of the forests which produce almost 7 percent of the national income (Pikulin 1963).

Preserving the fauna requires stepped-up zoological studies. The territory of Afghanistan, which forms the basic part of the ancient Mediterranean region, served as an arena for intensive changes; scientists can still find many new, interesting endemic forms (Narzikulov, Umarov 1972).

Since the April Revolution of 1978 and the creation of the Democratic Republic of Afghanistan, there has been significant progress in developing economic policies. The development of industry, farming, and the state economy as a whole cannot proceed without rational use of the natural resources, soil, vegetation, fauna and other resources. This is precisely why at the present stage of the country's development there is a real necessity to organize complex zoological studies of the natural resources. This should become one of the basic directions of the activities of the Academy of Sciences of the Democratic Republic of Afghanistan.

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Moscow SELEKTSIYA I SEMONOVODSTVO in Russian No 5, Sep/Oct 79 pp 61-62

BLIDMAN, A., Director of the Pavilon "Provision of Agricultural Products and Grain Storage and Processing"

[Abstract] A laudatory description is provided of the Third Exposition covering various seed processing techniques and Soviet machinery and equipment used for that purpose. The Exposition was jointly organized by the Ministry of Provisions USSR and the "Provision of Agricultural Products and Grain Storage and Processing" pavilion of the VDNKH (Exhibition of Achievements of the National Economy) USSR. Two previous expositions on the same topic were held in 1973 and 1976.
[522-12172]

USSR UDC 633.11"321":631.526.32(571.1)+(470+5)

HIGH YIELD VARIETIES OF SPRING WHEAT FOR THE URALS AND SIBERIA

Moscow SELEKTSIYA I SEMONOVODSTVO in Russian No 5, Sep/Oct 79 p 39

ZHURAVLEVA, O. A., senior agronomist, State Commission

[Abstract] Data are presented on new varieties of spring wheat intended for the Urals and Siberia. Tested under actual farming conditions, Sredneural'skaya variety yielded 20.4-32.2 quintals/hectars (q/ha) in the Sverdlovsk Oblast, Shadrinskaya variety yielded 15.0-25.5 q/ha in the Kurganskaya Oblast, Omskaya 9 provided yields of 10.1-28.4 q/ha in the Omsk Oblast, and Tselinnaya 20 produced 25.3-29.7 q/ha in the Altay Kray. Field trials with the different varieties of spring wheat were conducted during the 1974- 1976- to 1977 period.
[522-12172]

USSR UDC 631.544.45:628.8:631.527

CLIMATIC CHAMBERS, HOODS, AND STANDS FOR SUNFLOWER BREEDING

Moscow SELEKTSIYA I SEMONOVODSTVO in Russian No 5, Sep/Oct 79 pp 29-30

KLYUKA, V. I., candidate of agricultural sciences, Chief of the Department of Artificial Climate, All-Union Scientific Research Institute of Oil-Bearing Crops

[Abstract] Cursory descriptions are provided of various climatic chambers, hoods, and stands, including their physical characteristics, temperatures, illuminations, etc., which are intended for the breeding of experimental sunflower varieties. The equipment has been designed and manufactured by the Agrophysical Scientific Research Institute of the All-Union Agricultural Academy imeni Lenin and the scientific manufacturing enterprise "Mekhanika" of the Ministry of Electronic Industry USSR.
[522-12172]

USSR UDC 633.631.53.02(571.1)+(571.15)+(574)

EXPERIENCE WITH CULTIVATION AND INTRODUCTION OF NEW CROP VARIETIES INTO PRODUCTION

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 5, Sep/Oct 79 pp 16-19

AZIYEV, K. G., candidate of agricultural sciences, BORID'KO, T. I. and VEREVKIN, V. S., senior scientists, Siberian Scientific Research Institute of Agriculture

[Abstract] An account is provided of the testing and introduction into agricultural practice in Siberia of new crop varieties intended specifically for that region. In order to ensure efficiency along these lines, greater funding will have to be provided to render such measures feasible for the non-experimental farms, and greater cooperation among all the parties concerned will have to be encouraged by both financial and legal means. In addition, provisions will have to be made for timely deliveries of adequate quantities of new seeds and their rational distribution among the farms.
[522-12172]

USSR UDC 613.187/.288-074:/615.285.7+615.284/.074

DETERMINATION OF HEXACHLOROCYCLOHEXANE GAMMA ISOMER AND OF HEXACHLOROPARAXYLOL SIMULTANEOUSLY PRESENT IN MILK AND BUTTER

Moscow VOPROSY PITANIYA in Russian No 5, Sep/Oct 79 pp 64-66

CHMIL', V. D. and BRAZHNEVA, M. K., Laboratory of Pesticide Analytical Chemistry of Pesticides; All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev; and Voronezh Oblast Sanitary Epidemiologic Station

[Abstract] Gas chromatographic determinations of hexachloroparaxylol (I) are complicated by the fact that the gamma isomer of hexachlorocyclohexane (II) has virtually the same retention time on methylsilicon SE-30 columns and both compounds appear in a single peak. Consequently, modifications in the analytic technique are described which achieve different retention times (1 min 33.4 sec for I and 1 min 46.7 sec for II) through the use of a phenylmethylsilicon OV-17 column and, thus, two peaks appear which correspond to I and II. Recovery studies using milk and butter yielded 78.2% recovery for I in butter and 84.2% in milk, with corresponding values of 83.1% and 89.6% for II. The sensitivity of this technique for I in butter was 0.05 ng/kg, and 0.01 ng/kg in milk. Figures 4; references 4 (Russian).
[519-12172]

USSR UDC 636.37(47±57).08

CERTAIN BIOLOGICAL PROBLEMS IN THE PRODUCTION OF ROMANOV SHEEP

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 14 No 5, 1979 pp 561-567 manuscript received 6 Jun 78

ARSEN'YEV, D. D., Yaroslavl Scientific Research Institute of Animal Breeding and Feed Production

[Abstract] The current status of Romanov sheep breeding in the nonchernozem zone of the RSFSR is outlined. Primary emphasis is placed on improving the fertility of the breed, earlier weaning of the lambs, and mass rearing of the latter under controlled 'artificial' conditions. Cross-breeding studies are also underway in attempts to derive breeds of superior commercial value. References 16: 4 Western, 12 Russian.
[521-12172]

USSR UDC 621.3.095:581.48

ELECTRIC FIELD CALCULATIONS OF A DIELECTRIC SEED SEPARATOR EMPLOYING TRIANGULAR ELECTRODES

Moscow DOKLADY VASHNIL in Russian No 10, 1979 pp 43-45 manuscript received 13 Oct 78

TARUSHKIN, V. I., candidate of technical sciences, Moscow Institute of Agricultural Engineering imeni V. P. Goryachkin

[Abstract] Mathematical treatment is presented for the calculation of electric fields in a dielectric seed separator employing triangular electrodes. The resultant formulae may be used for the determination of electric field strengths in various zones of the separator which will act on the seeds and, therefore, permit evaluation of the system for efficiency in sorting, cleaning, and standardization of various seeds. Figures 2; references 4 (Russian).
[517-12172]

USSR

TECHNOLOGY OF POSTHARVEST PROCESSING OF FODDER GRAIN

Moscow DOKLADY VASHNIL in Russian No 10, 1979 pp 45-46

KOVAL'CHUK, YU. K., candidate of technical sciences and FOMIN, V. S., Chairman of the Kolkhoz imeni V. I. Lenin, Arkhangelsk Oblast

[Abstract] Description is provided of the large-scale use of a blower type of drum dryer AVM-0.4 for the drying and cleaning of fodder grain, substituted for the standard linear types of KZS assembly. This simpler set-up permits greater economics in the production of various fodder products.
[517-12172]

USSR UDC 576.852.1:577.157.2

COMPARISON OF TWO FIBRINOLYTIC ENZYMES FROM THE CULTURE MEDIUM OF ACTINOMYCES THERMOVULGARIS T-54

Moscow BIOLOGICHESKIYE NAUKI in Russian No 10, 1979 pp 75-77

YEGOROV, N. S., KOCHETOV, G. A. and KHAYDAROVA, N. V., Moscow State University imeni M. V. Lomonosov

[Abstract] A protein with fibrinolytic activity had been isolated earlier from the culture medium of Actinomyces thermovulgaris strain T-54. The study of fibrinolytic proteins obtained from this source was continued, leading to the isolation of yet another protein with different electrophoretic mobility on polyacryloamide gel, different sensitivity to phenylmethylsulfonyl fluoride, and different ability to hydrolyze the methyl ether of benzoyltyrosine. The isolation of this new protein required precipitation with ammonium sulfate to the saturation point of 0.8, followed by chromatography on CM cellulose at pH 7.1-7.2. EDTA and 5,5'-dithio-bis-2-nitrobenzoic acid did not inhibit this protein, while diisopropylfluorophosphate and phenylmethylsulfonyl fluoride did. Figure 1; references 7: 2 Russian, 5 Western.
[100-7813]

USSR UDC 622.765.061:576.8

USE OF VARIOUS METABOLIC PRODUCTS OF MICROORGANISMS AS SUBSTITUTES FOR OLEIC ACID

Dushanbe DOKLADY AKADEMII NAUK TADZHIKSKOY SSR in Russian Vol 22 No 6, 1979 pp 360-362

SOLOZHENKIN, P. M., IVANOVA, N. K., BEKHTEREVA, M. N. et al., Institute of Chemistry, Tadzhik SSR Academy of Sciences; Institute of Microbiology, USSR Academy of Sciences, Institute of Microbiology, Belorussian SSR Academy of Sciences

[Abstract] Oleic acid, an expensive reagent, is widely used in flotation of nonsulfide ores. In this study, several lipids were investigated as possible replacements for oleic acid. They were lipids from the fungi Blakeslea trispora (I) and cunninghamella (II), lipids from the yeasts lipomyces lipoferus (III and IV) and fatty acids isolated from them (I' and II'). The lipids I and II were found to be selective flotating agents for nonsulfide minerals. The fatty acids were less selective -- flotating all minerals to about the same extent. The most selective agent from the yeasts was the sample III. In a large scale study, samples I and IV were found to be just as effective as oleic acid showing that they could easily replace the latter in flotation operations. References 11: 9 Russian, 2 Western.
[74-7813]

USSR UDC 574.63

STUDY OF THE MICROFLORA OF EFFLUENT WATERS FROM MILK PROCESSING PLANTS OF KIRGIZ SSR IN CONNECTION WITH THE PROBLEM OF THEIR BIOLOGICAL PURIFICATION

Frunze IZVESTIYA AKADEMII NAUK KIRGIZSKOY SSR in Russian No 3, 1979
pp 73-77

BALYKIN, A. V., POGOREL'SKAYA, L. S. and DOROSHKEVICH, V. I., Institute of Physiology and Experimental Pathology of High Altitudes, Kirgiz SSR Academy of Sciences

[Abstract] Bacteriological studies of the effluent waters and active sludge from the Frunze milk processing plant and Anan'yev cheese plant were performed. For these experiments, specimens were collected at various points between the plant and the river entrance. A number of microflora was identified, including escherichia, citrobacter, proteus, E. coli commune, E. coli communior, coli aerogenes, proteus vulgaris, P. mirabilis and salmonella typhimurium. The sanitary state of the Frunze-plant sewage system was found to be highly unsatisfactory throughout the purification system. The highest contamination was found in June with the entire summer period from April to October having worse contamination than the winter period. The effectiveness of biochemical purification is pH sensitive. According to standards, it should be 6.5-8.5. Levels as high as 12 were found in the waste waters. The ability of natural water systems to purify themselves of microbial contamination depends on the activity of heterotropic microflora. This aspect was investigated under laboratory conditions showing that the antagonistic action of the microorganisms was manifested best in polycultural media. It should be possible to select strains with active physiological, biochemical and antagonistic parameters which could aid in biological self-purification of waste waters. References 19: 16 Russian, 3 Western.
[72-7813]

USSR UDC 575.1

CRITICAL ANALYSIS OF THE APPLICABILITY OF THE SHRIKHANDE METHOD IN THE GENETICS OF QUANTITATIVE PLANT TRAITS

Riga IZVESTIYA AKADEMII NAUK LATVIYSKOY SSR in Russian No 10, 1979
pp 111-126 manuscript received 28 Mar 79

RASHAL', I. D. and MARTYNOV, S. P., Institute of Biology, Latvian SSR Academy of Sciences, and the Scientific Research Institute of Agriculture of the Southeast, Saratov

[Abstract] The experimental and theoretical foundations of the Shrikhande method (J. Indian Soc. Agricult. Statistics, 9:82-99, 1957) for differentiating between genetic and nonhereditary components of plant variability were reviewed. This approach is based on empirical concepts of heterogeneity and an examination of the underlying assumptions has demonstrated that too many of the assumptions are unmet, rendering the parameters derived by the Shrikhande method unreliable for defining the genetic factors of a plant population. Figures 3; references 51: 14 Western, 37 Russian.
[89-12172]

USSR UDC 631.523/581.1.083

RYE-BARLEY HYBRIDS OBTAINED AND CLONED BY THE METHOD OF ISOLATED TISSUE CULTURES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 248 No 1, 1979 pp 218-220
manuscript received 23 Jun 79

SHUMNYY, V. K., corresponding member of the USSR Academy of Sciences and PERSHINA, L. A., Institute of Cytology and Genetics, Siberian Department of the USSR Academy of Sciences, Novosibirsk

[Abstract] Cloning of rye-barley hybrids previously developed was performed by the tissue culture method, which has proved itself in the past with somatic callus cells of other plant species. The apical meristem of vegetative cones from lateral runners of intergeneric rye-barley hybrids served as the material. After appearance of callus tissue it was submitted to passages for 1 year on medium B-5 or Kruse medium (with kinetin or indolylacetic acid). More than 10 pieces of callus tissue, each of which yielded 15 plants, were obtained from one of the explants. It was concluded that this technique makes it possible to improve remote hybridization of Gramineae. Figures 3; references 9: 5 Russian, 4 Western.
[73-10,657]

USSR UDC 633.854.78:581.19

"LIFE TIME" ANALYSIS OF FATTY ACID COMPOSITION OF OIL IN SUNFLOWERS AS A METHOD OF BIOTYPE ISOLATION

Moscow DOKLADY VASKhNIL in Russian No 9, 1979 pp 16-18 manuscript received 15 Feb 79

KHARCHENKO, L. N., candidate of biological sciences and PLYTNIKOVA, T. G., candidate of agricultural sciences, All-Union Scientific Research Institute of Vegetable-Oil Plants

[Abstract] The goal of the present research, performed from 1975 to 1978, was to isolate from sunflower variety populations biotypes with various spectra of fatty acids. Populations of Peredovik, VNIIMK 8931 and Pervenets were studied. In the first two oleic acid and linoleic fatty acids amounted to 27.6-28.1 and 59.9-60.5 % respectively, and, in Pervenets, oleic acid was 75.3%, linoleic--16.4%. The "Life time" gas chromatography analysis was conducted on oil of 1/8 of the sunflower seeds. In 1975-76 half of the plants flowered freely and half were self pollinated. In 1977-78 seeds were taken from these, one third flowered freely, a third was self pollinated, and a third was group pollinated. Descendants from Peredovik and VNIIMK 8931 which had self pollination were found to have higher oleic acid content by 4-8% in comparison with those which flowered freely. Pervenets maintained a high oleic acid content with self pollination but with free flowering it dropped 9-12% from its original level. In plants from repeated self pollinations from Peredovik and VNIIMK 8931, a series of biotypes emerged with significantly different spectra of fatty acids than their original forms. Several biotypes were developed with different spectra of fatty acid composition: oleic, linoleic, palmitic and stearic. The directed pollination of forms allowed increase in oil content. References 8 (Russian).
[511-12152]

USSR UDC 582.739:581.16

VARIABILITY OF QUANTITATIVE CHARACTERISTICS IN M^3 GENERATION OF γ-IRRADIATED LUPINE

Moscow DOKLADY VASKhNIL in Russian No 9, 1979 pp 15-16 manuscript received 16 Feb 78

SANAYEV, N. F. and BORISOVA, R. N., candidate of biological sciences, Mordovian State University imeni N. P. Ogarev

[Abstract] The authors administered γ-rays (^{137}Cs) to lupine, varieties Benyakonskiy 484 and Bystrorastushchiy 4, in doses of 5, 10, 20, 35, 45, and 5, 10, 15, 20, 25 kR. In the second generation, in each variant, 300 unchanged plants were chosen and seeds from them were planted. In the third generation, plants were studied for resulting plant height, formation of pods, and seed formation. In each family 10 plants were examined, and the information was analyzed mathematically to determine the coefficient of inheretability and the coefficient of genotypic and phenotypic variation. Under γ-radiation with a dose of 10 kR the lupine stalk length increased. With doses of 35 and 45 the plant height lessened. In all variants, the height changed, especially with 10 kR. The narrow-leafed lupine exhibited a high coefficient of inheretability. Yellow lupine did best with doses of 10 and 15 kR. Pod formation increased in Bystrorastushchiy 4 with 5 and 10 kR, and decreased with more radiation. Similar results occurred with seed quantity. Quantitative changes in irradiated lupine varieties were significant; optimum radiation was 5, 10 and 15 kR for yellow lupine and 10, 20, 35 kR for narrow-leafed lupine. References 7: 5 Russian, 2 Western.
[511-12152]

USSR UDC 633.11:581.145

USE OF LOCAL WHEAT VARIETIES FOR SELECTION UNDER SIBERIAN CONDITIONS

Moscow DOKLADY VASKhNIL in Russian No 9, Sep 79 pp 3-5 manuscript received 26 Jan 79

TSILKE, R. A., candidate of agricultural sciences, Siberian Scientific Research Institute of Plant Growing and Selection

[Abstract] From 1971-1977 the authors studied 180 varieties of the best soft winter wheat, including foreign varieties, varieties from the All-Union Scientific Research Institute of Plant Growing, and other old and new wheat varieties from various parts of the USSR. Planting was done from May 20-22, 250 seeds/m^2. With every 20 plots, standard Novosibirsk

67, Saratovskaya 29, and Mil'turum 553 were planted. To avoid harm from insects, the seedlings were treated with methyl parathion, hexachloran and Trichlorfon. Results showed wide variation depending upon genotype vegetation conditions. Some of the varieties from other areas did surpass the local varieties: in 1971, 13.6%; 1972, 1.2%; 1973, 5.7%; 1974, 2.3%; 1975, 2.8%; 1976, 8.9%; and 1977, 4.8%. Not one of the nonlocal varieties surpassed the best local on an average for the seven years. Of the newer local varieties, only Omskaya 9 approached the old variety Mil'turum 553 in numbers of plants collected. Hardiness also characterized Siberian varieties (Mil'turum 321, Skala, Tsezium 111) and Saratov varieties (Saratovskaya 29, Lyutestsens 62, 758). The results indicate that in efforts to raise wheat hardiness, it is appropriate to use local varieties. References 5 (Russian).
[511-12152]

USSR UDC 632.937

MICROBIOMETHODS IN THE CONTROL OF INSECTS AND RODENTS (A REVIEW)

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 14 No 5, 1979
pp 523-528 manuscript received 15 Aug 78

KANDYBIN, N. V., All-Union Scientific Research Institute of Agricultural Microbiology, Leningrad

[Abstract] A review is provided of the practices in the USSR and abroad involving the use of microorganisms in the control of insects and rodents within the framework of plant protection. Special attention is accorded to the production of such biologicals, the consequences of their use, and possible complications. In addition, emphasis is placed on the fact that addition of chemical insecticides or zoocides to these microbial preparations is justified only in situations with an indication for a rapid lethal outcome. References 20: 5 Western, 15 Russian.
[521-12172]

USSR UDC 633.1(470.31)

PROBLEMS OF GRAIN CROP BREEDING IN THE NONCHERNOZEM ZONE OF THE RSFSR IN RELATION TO INTENSIFICATION OF AGRICULTURE

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 14 No 5, 1979
pp 543-549 manuscript received 26 Mar 79

NETTEVICH, E. D., Scientific Research Institute of Agriculture for the Central Rayons of the Nonchernozem Zone, Nemchinovka, Moscow Oblast

[Abstract] A brief discussion is presented of the problems involved in making the nonchernozem zone of the RSFSR agriculturally productive. The discussion centers essentially on the selection of appropriate varieties of wheat, rye, oats, and barley that can thrive under the extant climatic and soil conditions and withstand the threat of common diseases prevalent in the area. Figures 2; references 9 (Russian).
[521-12172]

USSR UDC 633"324".11:58.036.5

AGE FACTORS IN THE RESISTANCE OF WINTER WHEAT TO LOW TEMPERATURES IN RELATION TO THE DEGREE OF GROWTH-CONE DIFFERENTIATION

Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian Vol 14 No 5, 1979
pp 582-585 manuscript received 21 Jul 77

BONDARENKO, V. I. and MITROPOLENKO, A. I., All-Union Scientific Research Institute of Corn, Dnepropetrovsk

[Abstract] Investigations were conducted on age factors involved in resistance to low temperatures of several varieties of winter wheat (Mironovskaya 808, Mironovskaya Yubileynaya, Kharkovskaya 63, Dneprovskaya 521, and Bezostaya 1) in relation to the degree of growth-cone differentiation. The results showed that Mironovskaya 808 wheat possessed greatest plasticity in terms of planting time and low temperature resistance. A high degree of resistance was correlated with the plants being in stage II of organogenesis at the time that spring vegetation was terminated. A morphologically-poorly developed growth cone in stage I and extension of the growth point in stage III was correlated with low frost resistance. Soluble sugars were found to increase from stage I to II, and showed a decline in stage III. The less tolerant varieties were found to display growth cones with larger dimensions than the resistant plants. Figures 1; references 14: 1 Ukrainian, 13 Russian.
[521-12172]

USSR UDC 613.263:633.34(048.8)

SOYBEAN IN HUMAN NUTRITION

Moscow VOPROSY PITANIYA in Russian No 5, Sep/Oct 79 pp 7-12 manuscript received 25 Jan 79

FAN TKHI KIM (FAN THI DIN in English Table of Contents), Institute of Nutrition, USSR Academy of Medical Sciences, Moscow

[Abstract] Largely Western literature is reviewed on the current status of soybean protein in human nutrition, both as harvested and as processed into various products intended for human consumption. The protein content of soya ranges from 35-40% depending on the conditions of cultivation; it is particularly rich in calcium, potassium, and phosphorus, and contains vitamins A, B, B_2, B_6, C, D, E, and P. Soybean protein contains all the essential amino acids, but is generally low in methionine (1.2-1.5%). It has been reported that inclusion of soybean in the diet lowers serum cholesterol levels by 20%. Tables 2; references 27: 4 Russian, 23 Western.
[519-12172]

USSR UDC 633.1:632.111.53+632.112

CURRENT PROBLEMS IN BREEDING GRAIN CROPS

Moscow SELEKTSIYA I SEMONOVODSTVO in Russian No 5, Sep/Oct 79 pp 13-16

SECHNYAK, L. K., doctor of agricultural sciences; MUSICH, V. N. and BIRYUKOV, S. V., candidates of biological sciences, All-Union Institute of Breeding and Genetics

[Abstract] The problem of breeding new varieties of grain crops is discussed from the point of view of producing crops resistant to diseases, low temperatures, drought, etc., and which, at the same time, meet all the nutritional requirements. A successful approach requires the cooperation of different specialists such as geneticists, physiologists and others, as well as the creation of adequate laboratory facilities under which the breeds can be tested under conditions simulating various biological and climatic situations.
[522-12172]

USSR UDC 633.11"324":632.165:632.111.53

BREEDING OF SHORT-STEM FROST RESISTANT WINTER WHEAT

Moscow SELEKTSIYA I SEMONOVODSTVO in Russian No 5, Sep/Oct 79 pp 21-22

SKATOVA, S. YE., Vladimir Agricultural Experimental Station

[Abstract] Results are presented of hybrid studies on wheat for the selection of breeds meeting the climatic conditions of the central non-chernozem zone of the RSFSR; qualities examined were resistance to lodging (short stems), diseases, frost-resistance, etc. Two new varieties designated as 7096 and 7097, obtained by Ul'yanovka x K-46524 crossings, were found to be superior to the currently available breeds in terms of these parameters and represent new starting material for further studies.
[522-12172]

USSR UDC 633.11"324":631.528.6:631.524.7

PRODUCTION OF WINTER WHEAT MUTANTS WITH INCREASED PROTEIN CONTENT

Moscow SELEKTSIYA I SEMENOVODSTVO in Russian No 5, Sep/Oct 79 pp 32-33

SICHKAR', V. I. and MAR'YUSHKIN, V. F., candidates of biological sciences; SHKVARNIKOV, P. K., doctor of biological sciences, SUVORINOV, A. M., candidate of agricultural sciences and PODMOGIL'NYY, V. V.

[Abstract] Studies were conducted with Kavkaz winter wheat to establish the effectiveness of gamma radiation (10 and 15 rad), nitrosoethylurea (0.025% and 0.0125%), and ethyleneimine (0.01% and 0.03%) in the production of mutants with higher concentrations of protein and satisfactory gluten properties. Studies on subsequent generations demonstrated that both the irradiation and chemical mutagens are useful in this respect and yielded acceptable varieties with a frequency of 0.27% to 1.76% among the M_3, M_4, M_5, and M_6 lines. Figures 1.
[522-12172]

USSR UDC 633.11:631.527

RELATIONSHIP BETWEEN WHEAT DWARFNESS, SEED SPROUTING, AND FIELD HARVESTS

Moscow DOKLADY VASHNIL in Russian No 10, 1979 pp 6-8 manuscript received 14 Mar 79

LYFENKO, S. F., candidate of biological sciences and YERINYAK, N. I., All-Union Order of Lenin and Order of the Red Banner of Labor Institute of Breeding and Genetics

[Abstract] Studies were conducted with winter and spring wheat hybrids to establish the relationships among harvest yields, sprouting energy, dwarfness, and coleoptile size. Examination of the resultant laboratory and field data demonstrated that a positive correlation prevailed between the length of the coleoptile and stem height ($r = 0.685$), as well as a highly significant correlation between the coleoptile length and field harvests ($r =0.882$). As expected, a positive correlation also prevailed between plant height and field yields ($r = 0.754$). Laboratory observations -- that the semidwarf Nainari 60 variety and a mutant of Odessa 16 possessed longer coleoptiles than usually encountered -- suggested possible derivation of dwarf and semidwarf varieties with long coleoptiles and, therefore, high yields. However, the matter is complicated by the presence of a large number of dwarfness genes which counteract coleoptile length and the sprouting rate. References 6 (Russian).
[517-12172]

USSR UDC 632.4:633.491

INFLUENCE OF SOME FUNGICIDES AND BIOLOGICALLY-ACTIVE SUBSTANCES ON BIOSYNTHESIS OF PHYTOALEXINS IN POTATO TUBERS INDUCED BY PHYTOPHTHORA INFESTANS (MONT.) DE BARY

Moscow DOKLADY VASKhNIL in Russian No 9, 1979 pp 18-21 manuscript received 26 Oct 78

TYUTEREV, S. L. and TARLAKOVSKIY, S. A., candidates of biological sciences, and MELOYAN, V. V., All-Union Scientific Research Institute of Plant Protection

[Abstract] This work examined the preplanting application on tubers, and spraying on plants, of various fungicides and biologically-active substances and resulting effects on P. infestans induced phytoalexin biosynthesis. The object of research was a new harvest of potato variety Detskosel'skiy (genotype R_1) taken from an All-Union Institute for the Protection of Plants field in the Leningrad Oblast in 1977. Application of tubers was done with Zineb, Daconil, Levomycetin and chlorocholine. The plants were sprayed with a water suspension of Zineb, Polycarbasine suspension of Polycarbasine, and solution of chlorocholine. The experiment was repeated three times. Tubers were inoculated with P. infestans; then their ability for phytoalexin biosynthesis was determined. The results showed that with P. infestans infection, the tubers processed with the fungicides and biologically-active substances possessed more ability to form phytoalexins than the control group. Levomycetin was the most effective on tubers. With plant spraying, the most active were Zineb and Polycarbasine. References 10: 5 Russian, 1 Hungarian, 4 Western. [511-12152]

USSR UDC 582.28:579.8

MAINTENANCE OF FUNGAL CULTURES IN LIQUID NITROGEN

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 13 No 3, 1979 pp 432-437 manuscript received 23 May 78

BELYAKOVA, L. A., LOGINOVA, L. G., BURDENKO, L. G., LEBEDEVA, M. K. and ODOYEVSKAYA, N. S., Institute of Microbiology, USSR Academy of Sciences, Moscow

[Abstract] A variety of fungal agents were tested for their viability following storage in liquid nitrogen in view of that fact that not all species of interest can be preserved by lyophilization. Results obtained by employing various conditions of freezing, revealed that viability was

retained by the Entomophtorales, Mucorales, and Ascomycetes following storage at -130°, but that Basidiomycetes (Pleurotus cornucopiae 1979) and Comycetidae (Achlya bisexualis 1795, A. heterosexualis 1794, Pythium oedochilum 1791, Saprolegnia ferax 946) failed to survive. References 24: 2 Russian, 22 Western.
[520-12172]

USSR UDC 632.938:633.878.32:582.285.2

PHYTOALEXIN ACTIVITY OF POPLARS AS AN INDICATOR OF RUST RESISTANCE

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 13 No 3, 1979
pp 428-431 manuscript received 12 Sep 78

DENBNOVETSKIY, G. YU. AND BASOVA, S. V., Central Scientific Research Institute of Forest Genetics and Breeding, Voronezh

[Abstract] In vitro studies employing poplar leaves were used to test the responsiveness of plants susceptible and resistant to rust disease (caused by Melampsora larici-populina) in terms of phytoalexin production. The results showed that exposure of the resistant plants to the uredospores of the rust agent resulted in the production of 2-3 times as much phytoalexin as seen with the susceptible plants. These preliminary findings point to the utility of using phytoalexin production in the evaluation of the capacity of new breeds of poplar to resist rust disease. Tables 1; references 11: 1 Western, 10 Russian.
[520-12172]

USSR UDC 633.174:632.4(470.4)

LOOSE SMUT ON SORGHUM IN THE VOLGA VALLEY: DISTRIBUTION, HARMFULNESS AND RESISTANCE OF DIFFERENT VARIETIES

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 13 No 3, 1979
pp 414-418 manuscript received 15 Jan 79

SILAYEV, A. I. and CHUMAKOV, A. YE., All-Union Institute of Plant Protection, Leningrad

[Abstract] During the 1975-1978 period investigations were carried out in the Central and Lower Volga Valley on the distribution of various causal agents of loose smut (Sphacelotheca sorgi, Sorosporium reilianum, Sphacelotheca cruenta) on sorghum. The resultant data indicated that such agents were widely disseminated largely because of poor sorghum

cultivation practices which encourage the persistence and survival of the causal agents, as well as their spread to new fields. In addition to direct damage to the plants, loose smut also depresses sorghum fertility, inhibits plant growth, and adversely affects productivity. These problems can be overcome to some extent through the introduction and cultivation of resistant sorghum varieties. References 15: 1 Western, 14 Russian. [520-12172]

USSR UDC 632.4:633.16:576.8.097.21

POPULATION STRUCTURE OF THE BARLEY NET BLOTCH CAUSAL AGENT IN TERMS OF ITS VIRULENCE. II. RACIAL DISTRIBUTION

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 13 No 3, 1979
pp 385-388 manuscript received 26 Dec 78

AFANASENKO, O. S. and LEVITIN, M. M., All-Union Institute of Plant Protection, Leningrad

[Abstract] Studies were conducted in various regions of the USSR during the 1976-1977 period to determine the distribution of Drechslera teres, the causal agent of barley net blotch, in terms of virulence of the agent. The results showed that the highest number of races were detected in the Leningrad and Latvian populations, 44 and 41 races respectively, followed by the Moscow Oblast (37), and Gor'kiy Oblast (27). The racial heterogeneity of D. teres was ascribed to the large number of different barley varieties that were being cultivated in those regions. The most frequently encountered virulent strain was race 0 which accounted for 45.9% to 61.1% of the isolates in 1976. This race continued to predominate to a somewhat lesser extent in 1977 with the exception of the Gor'kiy Oblast where race 2 became the dominant isolate (47.9%). Isolates obtained from barley shoots constituted the most virulent populations of D. teres, while those isolated from the maturing and mature plants represented populations of lesser virulence. Figures 2; references 8: 3 Russian, 5 Western. [520-12172]

USSR UDC 581.192:546.175

ACCUMULATION OF TOXIC NITROGENOUS SUBSTANCES IN PLANTS

Moscow DOKLADY VASHNIL in Russian No 10, 1979 pp 30-31 manuscript received 26 Oct 78

MAKAROVA, A. I., candidate of geological and mineralogical sciences and TRISHINA, T. A., All-Union Order of the Red Banner of Labor Scientific Research Institute of Fertilizers and Pedology imeni D. N. Pryanishnikov

[Abstract] Determinations were made of tissue levels of nitrosoamines in wheat, corn, potatoes, beets, and cereal crops in relation to the use of nitrogen fertilizers. The dose-effect results showed that the fertilizer dose has no effect on nitrosoamine concentrations in wheat, but leads to a marked increase in the nitrosoamine levels in the other crops under study. These observations point to the need for monitoring agricultural products for this and other potentially toxic substances in relation to the methods of cultivation. References 7: 1 Russian, 6 Western.
[517-12172]

USSR UDC 636.2:591.39

NONSURGICAL REMOVAL OF EMBRYOS FROM DAIRY CATTLE

Moscow DOKLADY VASHNIL in Russian No 10, 1979 pp 37-38 manuscript received 2 Apr 79

GORBUNOV, V. N. and SERGEYEV, N. I., candidates of biological sciences, All-Union Order of the Red Banner of Labor Scientific Research Institute of Animal Breeding

[Abstract] The following modification was employed for obtaining oocytes and embryos from dairy cows and calfs; induction of superovulation with gonadotropin, induction of luteolysis with prostaglandin injection and artificial insemination. The uterine horns were washed out with buffered physiologic solutions, yielding an average of 3.7 oocytes and embryos per donor. Transplantation of the embryos to 16 recipients (2 cows, 14 calfs) led to the birth of 2 calves. References 8 (Western).
[517-12172]

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